THE VALUE OF MACKENZIE'S "HAIR BRUSH" TECHNIC IN THE ISOLATION OF *T. MENTAGROPHYTES* FROM CLINICALLY NORMAL GUINEA-PIGS*

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Laboratory and domestic animals quite often harbor dermatophytes in spite of the fact that clinical disease does not exist (1–5). In 1955, Fuentes and Aboulafia (1) isolated *Trichophyton mentagrophytes* from over 13% of 113 apparently healthy guinea-pigs. The virulence of one of these isolates for the guinea-pigs was demonstrated by experimental inoculation. Dolan, *et al* (2) found that 18% of hair samples from healthy rats and mice contained viable *T. mentagrophytes*. During epizootics among guinea-pigs (3, 4) isolates of *T. mentagrophytes* were often obtained from animals which were apparently not infected. Fuentes, *et al* (5) isolated *Microsporum gypseum* as well as *T. mentagrophytes* from healthy cats.

The studies cited above have utilized plucked or clipped hairs as inocula for the isolation of dermatophytes. Recently Mackenzie (6) has studied an outbreak of *T. tonsurans*-tinea capitis at a girls' residential school in Ireland by means of "hair brush" diagnosis. In this technic, each subject was given a sterilized hair brush for her personal use. After the hair had been brushed, the brush was returned to the laboratory where the bristles, which were contaminated with scales and hairs of the patient, were pressed into the medium. *T. tonsurans* was subsequently isolated. The effect of griseofulvin therapy was followed by noting a decrease in the number of isolations from hair brushes. A comparison of the relative efficacy of the conventional method of using plucked hairs with the use of hairs and scales obtained by Mackenzie's hair-brush method, for the isolation of dermatophytes from clinically healthy guinea-pigs is the subject of this report.

METHOD

Hairs from 222 guinea-pigs, which had no visible skin lesions, were cultured on Sabouraud-cycloheximide-chloramphenicol agar. The inocula were obtained by 2 methods:

First, hairs were obtained by plucking with forceps from the area of the nose, back and abdomen. These epilated hairs were combined and inoculated onto the surface of an agar slant.

Second, each animal was brushed over his entire coat with a sterile, hard-bristled hand brush (2.5 inches x 1.5 inches). After brushing, the bristles were touched several times to petri dishes of the medium, so that all parts of the surface of the plate were inoculated. The brushes were applied with sufficient force to dislodge some hairs and scales, but not hard enough to break the surface of the agar.

All tubes and plates were incubated at room temperature for 2 weeks and examined at weekly intervals. All colonies which grossly resembled a dermatophyte were subcultured and subsequently examined carefully before a final species diagnosis was made.

RESULTS

Of the 222 guinea-pigs examined, 28 (13%) yielded cultures of *T. mentagrophytes*, the only dermatophyte species isolated. Eighteen animals yielded *T. mentagrophytes* by brushing and negative cultures by plucking. Materials from 8 animals yielded positive cultures by both methods. Two animals yielded positive cultures with plucked hairs and negative cultures by the brush method. Thus, a total of 26 (12%) animals were positive by the hair brush method and 10 (5%) were positive by plucking.

DISCUSSION

It is obvious that the hair brush method is much superior to the conventional plucking method in yielding isolates from clinically normal appearing guinea-pigs with latent *T. mentagrophytes* infection.

Without further studies it is not possible to decide whether a similar superiority of the brushing method would be established with hairs and scales from guinea-pigs latently infected with other species of fungi.

A rather surprising observation made during the course of this study was the isolation of only *T. mentagrophytes* from the animals since some of these guinea-pigs had been stored for periods up to one week in a room shared by animals experimentally infected with *M. canis* as well as with *T. mentagrophytes*. The incidence of isolations of *T. mentagrophytes* was no higher with culture materials from animals stored in the "infected" animal room as those with animals stored in a "clean" animal room. It is noteworthy that not a single one of the animals harboring *T. mentagrophytes* developed any visible changes suggesting "spontaneous" ringworm, although they were under observation for 1–2 months.

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SUMMARY

A substantially higher number of isolates of *Trichophyton mentagrophytes* were obtained from clinically normal guinea-pigs using Mackenzie's hair brush method as compared with the conventional method of plucking hairs. Spontaneous ringworm did not develop in any of the animals found to have latent infection with this dermatophyte.

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